

# The Enigmatic ALFALFA (Almost) Dark Galaxy AGC 229101 ()

[Show affiliations](#)

**Leisman, Lukas; Pagel, Hannah; Ball, Catherine; Rhode, Katherine; Salzer, John; Janesh, William; Cannon, John M.; Haynes, Martha P.; Józsa, Gyula; Adams, Elizabeth; Janowiecki, Steven**

We present deep HI and optical imaging of AGC 229101, an enigmatic and potentially unique source detected in the ALFALFA survey. Though it has an HI mass  $>10^9$  solar masses, it is not detected in SDSS imaging, and has a very narrow HI line width. Deep follow up imaging with pODI on the WIYN 3.5m at KPNO detects a very blue, very low surface brightness optical counterpart with a stellar mass  $<10^7$  solar masses, giving a gas fraction of  $M_{\text{HI}}/M^*$  in excess of 200. Low resolution WSRT HI imaging and higher resolution VLA B-array imaging reveal that AGC 229101 appears to consist of two connected HI components, with the optical counterpart associated with the peak column density in the northern component. The two components have approximately equal mass and radii, and together stretch over  $>80$  kpc as projected on the sky. We compare the properties of AGC 229101 to other extreme HI-rich sources, and demonstrate that its properties appear to be unique relative to others sources in ALFALFA. We discuss potential explanations, including a tidal encounter between neighboring sources, a merger of two independent, almost dark sources, and gas in-fall along a filament.

**Publication:**

American Astronomical Society, AAS Meeting #233, id.351.14

**Pub Date:**

January 2019

**Bibcode:**

2019AAS...23335114L



Feedback/Corrections? ([http://adsabs.harvard.edu/adsfeedback/submit\\_abstract.php?](http://adsabs.harvard.edu/adsfeedback/submit_abstract.php?bibcode=2019AAS...23335114L)

[bibcode=2019AAS...23335114L](http://adsabs.harvard.edu/adsfeedback/submit_abstract.php?bibcode=2019AAS...23335114L))

